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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,209	03/11/2004	Jianwen Yang	1673(New Span)	6156
30010	7590	11/14/2005	EXAMINER	
AUZVILLE JACKSON, JR. 8652 RIO GRANDE ROAD RICHMOND, VA 23229			BLEVINS, JERRY M	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/798,209

Applicant(s)

YANG, JIANWEN

Examiner

Jerry Martin Blevins

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-10 and 13-21 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 11, 12, 22 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In the present case, the abstract exceeds the maximum allowable limit of 150 words.

Appropriate correction is required.

### ***Claim Objections***

Claims 2-5 are objected to because of the following informalities:

Regarding claim 2, the claimed "backplane waveguide ribbon fiber cores" and the claimed "array waveguide evanescent coupler fiber cores" lack antecedent basis in the

Art Unit: 2883

parent claim 1. For purposes of examination, examiner interprets the “backplane waveguide ribbon fiber cores” to refer to the claimed “at least one first optical ribbon fiber” core and the “array waveguide evanescent coupler fiber cores” to refer to the claimed “at least one second optical ribbon fiber” core.

Claims 3-5 are objected to based on their dependence from claim 2.

Appropriate correction is required.

Claims 22 and 23 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

In the present case, claim 22, improperly refers to “claims 1 and 8 and 15”.

Claim 23 depends from claim 22.

Appropriate correction is required

### ***Claim Rejections - 35 USC § 112***

Claims 15-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites the same structure as the preceding independent claims 1 and 8. However, the preamble to claim 15 is to “an non-evanescent optical coupler”, whereas, the preamble to the preceding independent claims is to “an evanescent optical coupler.” It is unclear to the examiner which limitations from claim 15 differentiate claim

Art Unit: 2883

15 from the preceding independent claims such that claim 15 recites an entirely different coupling function. Further perplexing the examiner is claim 16, dependent from claim 15, which claims "intimate evanescent contact between the first and second optical ribbon fiber or waveguide cores", which would imply that the coupler of claim 15 is, in fact, an evanescent optical coupler, and therefore, identical to the coupler claimed in claim 1. For purposes of examination, examiner interprets claim 15 to refer to an evanescent optical coupler, which also provides for alternate forms of optical coupling between the fibers or waveguides.

Dependent claims 16-21 are also rejected as including the limitations of rejected claim 15.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 7-10, 14-17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent to Stowe, number 4,533,208 in view of US Patent to Shaw et al., number 4,493,528.

Regarding claim 1, Stowe teaches an evanescent optical coupler (Figures 1 and 2, and throughout text of patent) comprising: A) a pair of opposing and parallel carriers (Figure 1, elements 12, 20, column 3, lines 12-58) that define at least one pair of

opposed first and second channels; B) a mechanism for retaining the at least one pair of opposed first and second channels in facing relationship (Figure 1, elements 36,38, column 3, lines 36-58), C) at least one first optical fiber (single fiber 14, Figure 1 or plurality of fibers 40, Figure 2, column 3, lines 12-66) having an exposed core (Figure 1, element 18, column 1, line 65 – column 2, line 7, column 3, lines 33-58) located in the first of the parallel and opposed channels, and D) at least one second optical fiber (Figure 1, plurality of fibers 20, denoted fibers 24, 25, 26, and Figure 2, plurality of fibers 42, column 3, lines 17-66) having an exposed core (Figure 1, elements 32-34, column 1, line 65 – column 2, line 7, column 3, lines 33-58) located in the second of the parallel and opposed channels, wherein the at least one optical fiber core in the first of the opposed channels and the at least one optical fiber core in the second of the opposed channels are retained in abutting and facing evanescent optical contact and define at least one abutting pair of first and second optical fiber cores (column 3, lines 12-66). Although Stowe teaches varying the angle of the coupled fibers (column 4, lines 7-10), Stowe does not explicitly teach that the at least one pair of opposed first and second channels is parallel. However, Shaw teaches evanescent coupling between a plurality of fibers located in parallel and opposed channels (Figure 6). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Stowe with the parallel channels of Shaw. The motivation would have been to improve coupling between the fiber cores. Stowe also does not explicitly teach that the at least one first optical fiber and the at least one second optical fiber are optical ribbon fibers. However, Stowe does teach a first and second pluralities of optical fibers (Figure 2,

Art Unit: 2883

elements 40,42, column 3, lines 59-66), which serve as the functional equivalent of the claimed, ribbon fibers. It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the plurality of fibers of Stowe with the claimed ribbon fibers. The motivation would have been to better insure proper alignment of the fiber cores.

Regarding claim 8, Stowe teaches an evanescent optical coupler (Figures 1 and 2, and throughout text of patent) comprising: A) a pair of opposing and parallel carriers (Figure 1, elements 12, 20, column 3, lines 12-58) that define at least one pair of opposed first and second channels; B) a mechanism for retaining the at least one pair of opposed first and second channels in facing relationship (Figure 1, elements 36,38, column 3, lines 36-58), C) at least one first optical fiber (single fiber 14, Figure 1 or plurality of fibers 40, Figure 2, column 3, lines 12-66) having an exposed core (Figure 1, element 18, column 1, line 65 – column 2, line 7, column 3, lines 33-58) located in the first of the parallel and opposed channels, and D) at least one second array waveguide evanescent optical fiber (Figure 1, plurality of fibers 20, denoted fibers 24, 25, 26, and Figure 2, plurality of fibers 42, column 3, lines 17-66) having an exposed core (Figure 1, elements 32-34, column 1, line 65 – column 2, line 7, column 3, lines 33-58) located in the second of the parallel and opposed channels, wherein the at least one optical fiber core in the first of the opposed channels and the at least one optical fiber core in the second of the opposed channels are retained in abutting and facing evanescent optical contact and define at least one abutting pair of first and second optical fiber cores (column 3, lines 12-66). Although Stowe teaches varying the angle of the coupled fibers

Art Unit: 2883

(column 4, lines 7-10), Stowe does not explicitly teach that the at least one pair of opposed first and second channels is parallel. However, Shaw teaches evanescent coupling between a plurality of fibers located in parallel and opposed channels (Figure 6). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Stowe with the parallel channels of Shaw. The motivation would have been to improve coupling between the fiber cores. Stowe also does not explicitly teach that the at least one first optical fiber and the at least one second array waveguide evanescent optical fiber are optical ribbon fibers. However, Stowe does teach a first and second pluralities of optical fibers (Figure 2, elements 40,42, column 3, lines 59-66), which serve as the functional equivalent of the claimed, ribbon fibers. It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the plurality of fibers of Stowe with the claimed ribbon fibers. The motivation would have been to better insure proper alignment of the fiber cores. Furthermore, Stowe does not explicitly teach that the at least one first optical fiber is a backplane waveguide. However, the examiner interprets this limitation as an intended use. Although not explicitly taught, the at least one first optical fiber of Stowe can be used as a backplane. Therefore, this limitations is not being given patentable weight.

Regarding claim 15, Stowe teaches an evanescent optical coupler (Figures 1 and 2, and throughout text of patent) which provides for alternate forms of optical coupling (column 3, line 66 – column 4, line10) comprising: A) a pair of opposing and parallel carriers (Figure 1, elements 12, 20, column 3, lines 12-58) that define at least one pair of opposed first and second channels; B) a mechanism for retaining the at least one pair



Art Unit: 2883

of opposed first and second channels in facing relationship (Figure 1, elements 36,38, column 3, lines 36-58), C) at least one first optical fiber (single fiber 14, Figure 1 or plurality of fibers 40, Figure 2, column 3, lines 12-66) having an exposed core (Figure 1, element 18, column 1, line 65 – column 2, line 7, column 3, lines 33-58) located in the first of the parallel and opposed channels, and D) at least one second optical fiber (Figure 1, plurality of fibers 20, denoted fibers 24, 25, 26, and Figure 2, plurality of fibers 42, column 3, lines 17-66) having an exposed core (Figure 1, elements 32-34, column 1, line 65 – column 2, line 7, column 3, lines 33-58) located in the second of the parallel and opposed channels, wherein the at least one optical fiber core in the first of the opposed channels and the at least one optical fiber core in the second of the opposed channels are retained in abutting and facing evanescent optical contact and define at least one abutting pair of first and second optical fiber cores (column 3, lines 12-66). Although Stowe teaches varying the angle of the coupled fibers (column 4, lines 7-10), Stowe does not explicitly teach that the at least one pair of opposed first and second channels is parallel. However, Shaw teaches evanescent coupling between a plurality of fibers located in parallel and opposed channels (Figure 6). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Stowe with the parallel channels of Shaw. The motivation would have been to improve coupling between the fiber cores. Stowe also does not explicitly teach that the at least one first optical fiber and the at least one second optical fiber are optical ribbon fibers. However, Stowe does teach a first and second pluralities of optical fibers (Figure 2, elements 40,42, column 3, lines 59-66), which serve as the functional equivalent of the

Art Unit: 2883

claimed, ribbon fibers. It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the plurality of fibers of Stowe with the claimed ribbon fibers. The motivation would have been to better insure proper alignment of the fiber cores.

Regarding claims 2, 9, and 16, Stowe in view of Shaw teaches the limitations of the base claims 1, 8, and 15, respectively. Stowe also teaches a mechanism for applying pressure to the pair of opposed carriers to insure intimate evanescent contact between the fiber cores (Figure 1, elements 36,38, column 3, 42-58).

Regarding claims 3, 10, and 17, Stowe in view of Shaw teaches the limitations of the base claims 2, 9, and 16, respectively. Although Stowe does not teach one or more locking screws or at least one calibrated spring, Stowe does teach a clamping apparatus 36,38 which serves as the functional equivalent. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Stowe with either the claimed locking screws or the claimed calibrated spring. The motivation would have been to ensure evanescent coupling between the fibers (Stowe, column 3, lines 42-58).

Regarding claims 7, 14, and 21, Stowe in view of Shaw teaches the limitations of the base claims 1, 8, and 15, respectively. Stowe also teaches that the fibers are D-shaped optical fibers (Figures 1 and 2).

Claims 6, 13, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stowe in view of Shaw as applied to claims 1, 8, and 15 above, and further in view of US Pre Grant Publication to Nikonov et al., number 2003/0123804.

Regarding claims 6, 13, and 20, Stowe in view of Shaw teaches the limitations of the base claims 1, 8, and 15, respectively. Stowe does not teach a layer of index matching fluid between the fibers. Nikonov teaches a layer of index matching fluid (Figure 2, element 140) between an optical fiber core (132) and an optical waveguide core (110). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Stowe to include the layer of index matching fluid of Nikonov. The motivation would have been to improve the coupling between the fibers (Nikonov, page 1, paragraph 12).

#### ***Allowable Subject Matter***

Claims 4, 5, 11, and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 4 and 11, Stowe in view of Shaw teaches the limitations of the base claims 3 and 10, respectively. However, Stowe, either alone or in combination with the prior art of record, does not disclose or render obvious a frame comprising an enclosed structure having a top, a bottom, and opposed sides connecting the top and the bottom, the carriers located in one corner of the structure against one wall and either the top or the bottom, or that the mechanism for applying pressure to the pair of carriers comprises a pair of locking screws, one of which penetrates the top or the

Art Unit: 2883

bottom and the other penetrates one wall thereby applying pressure to the carriers from two orthogonal directions.

Regarding claims 5 and 12, Stowe in view of Shaw teaches the limitations of the base claims 3 and 8, respectively. However, Stowe, either alone or in combination with the prior art of record, does not disclose or render obvious a pressure distribution plate between a carrier and the mechanism for applying pressure in order to provide even distribution of pressure to the carriers.

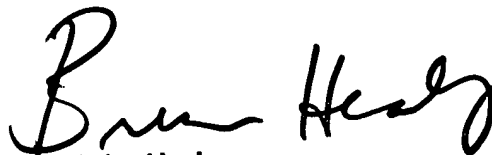
**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMB

  
Brian Healy  
Primary Examiner